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REARING THE YOUNG OF THE VIVIPAROUS COCKROACH, *PANCHLORA CUBENSIS*

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In May, 1929, a *Panchlora cubensis* Saussure, was found in a grocery store in Tompkinsville, Staten Island, N. Y., and presented to the writer. The roach was placed in a jar and fed on various fruits, which, as the summer progressed, got mouldy so soon that the food supply was changed almost daily.

In the middle of July it was observed that a number of young cockroaches, about twenty in all, had suddenly appeared, and that the portion of a peach that was in the jar was so soft that they had become immeshed in its substance, and that most of them were dead. They had evidently been born alive, for, as has been stated, the food was changed so often that there was no opportunity for an oötheca to have remained in the jar over two days. If it had been carried about by the female, as in some species of cockroaches, it would have been observed.

Four living young were found and placed in a separate jar with banana peel, a dryer food than the peach, and they did well until the 26th of September when two of them died. Meanwhile the mother *cubensis* had died in late August, after being in captivity about three months.

The remaining two nymphs continued in apparent good health, and on January 22 one was found to have transformed into a green adult male. At that date the remaining nymph was 14

millimeters in length. On January 25 the male was taken to the Staten Island Museum and shown to Mr. Charles W. Leng. We were to exhibit it at the meeting of the Staten Island Nature Club, but by evening it had escaped and could not be found.

On the morning of March 5 the remaining nymph was found to have just transformed into male number two, with the old and brown skin, still soft and limp, lying close by. This living specimen together with the nymphal skin, the two deceased young of September, 1929, and the mother *Panchlora*, were shown at the March 18, 1930, meeting of the New York Entomological Society.

It will be noted that it took the first male cockroach a little over six months to mature, while the second one, under as nearly as possible the same conditions, required nearly eight months. At first the four nymphs kept close together among the folds of the banana peel and were very sociable, and after September 26, when two of them died, the surviving nymphs continued to keep near each other until the first male matured, when, for the three days that he was under observation before his escape, it was noted that he was no longer as sociable, and tended to keep more by himself.

The first statement of the fact that *Panchlora* is viviparous or ovoviparous appears to be found in Dr. C. V. Riley's accounts in *Insect Life*, vol. iii, pages 443-444, 1891, and vol. iv, pages 119-120, 1891, based on observations of Dr. Carl F. Gissler and Gustave Guttenberg, as well as the subsequent examination and dissection of some of the material received from them. In these instances, however, the young were not brought to maturity as in the present case, though there was no doubt of the accuracy of the observations made by Dr. Gissler and Mr. Guttenberg about the young being born alive.

In "Further Notes on *Panchlora*," on page 119 of *Insect Life*, is the statement made by Mr. Guttenberg that the "green cockroach which, while being examined by one of his scholars, had given birth to about thirty living young, besides some individuals still in their 'pupa cases' [egg sacs] and a cluster of about twelve 'pupæ' [eggs] arranged side by side."

This statement can be further verified by the writer, who received on December 19, 1929, from Mr. Carol Stryker, a dead female *Panchlora* that had been put into a box when alive and brought to the Staten Island Museum. In the same box there were found three broken parts of what had possibly been a single mass of eggs, in all about forty-five in number, that upon examination appear to have come from the *Panchlora*. As so often happens among insects, when about to die, she had extruded the eggs.

Dr. Riley identified the species examined by him as *Panchlora viridis*, but Mr. Morgan Hebard states in "The Blattidæ of North America" that no individuals of *viridis*, a South American species, have appeared in collections of material adventive in the United States. In the experience of the writer with adventive material of *Panchlora cubensis*, the females are far more numerous than the males, in fact as yet we have secured no males from grocery and fruit stores.

In addition to *Panchlora cubensis* it is evident that cockroaches of other species are viviparous. In his *Jungle Days*, page 34, William Beebe mentions "a giant wood roach all browns and greys, with marbled wings, strange as to pigment and size. . . . The insect had flown through the rain and into the window, but a glance showed that it was in dire extremity, being in the grasp of a two-inch etenid spider." In a short time while still in the grasp of the spider the cockroach gave birth to about "fifty active roachlets." "They had burst from their mother fully equipped and ready for life. . . . Tiny, green, transparent, fleet, they raced back and forth over the spider. He grasped in vain at their diminutive forms, at the same time still clutching the dying flavorless shred of a mother roach."

In the *Cambridge Natural History*, vol. v, page 229, Dr. Sharp cites Dr. Riley's articles in *Insect Life*, 1891, and continues: "It is well known that some Blattidæ are viviparous. In the case of one such species, *Panchlora viridis*, it appears probable that the egg-capsule is either wanting, or is present in only a very imperfect form." With the exception of Dr. Sharp's statement that some cockroaches are born alive, the standard works on entomology that we have consulted do not mention the fact, and

refer only to the presence of the egg-case or oötheca. Dr. Packard in his *Text-Book of Entomology*, 1909, states that: "The viviparous species are confined to certain May-flies, the Aphidæ, Diptera (Sarcophaga, Tachinidæ, Œstridæ, and Pupipara), and to certain Coleoptera (Stylopidæ and some Staphylinidæ)."

It may be added as a further note that the male, which matured March 5, is still living and doing well on June 8, 1930.